

Proposed Hydraulic Evaluation for the W. Vermont, IN Site

In order to assess the hydrogeologic conditions in the vicinity of North Holt Rd (south of W. Michigan St. and north of W. Vermont St), Weston is proposing to conduct continuous groundwater level monitoring in a series of 8 monitoring wells, and potentially 1-2 residential wells (pending homeowner approval) for a period of 2 weeks. The purpose of the continuous water level monitoring is to evaluate the hydraulic effects on the aquifer in this area caused by the pumping of the nearby residential wells at the W. Vermont Site (the only apparent users of groundwater in the area). Spreading of the vinyl chloride plume in a westerly direction (cross gradient from the natural southerly groundwater flow) is believed to be the result of the residential well pumping that occurs at the W. Vermont Site. Continuous groundwater level monitoring would document the changes in water levels that occur throughout the day as a result of domestic water use during peak and off-peak periods and weekends.

Continuous water level monitoring would be performed using electronic pressure transducers (In Situ Level Troll 700's or equivalent) whose data would be downloaded onto a portable datalogging system every 2 days. Manual water level measurements would also be made every other day to verify the accuracy of the electronic data. The wells proposed for continuous water level monitoring are as follows:

<u>Well ID</u>	<u>Total Depth</u>
1. MW-WES-1b -	37.5'
2. MW-WES-1c -	55'
3. MW-WES-2b -	40'
4. MW-WES-2c -	50'
5. MW-WES-5b -	37.5'
6. MW-WES-5c -	50'
7. MW-170D -	40'
8. MW-167D -	34'
9. Ex. 6 Cossell Road (private well)	62'

At the conclusion of the 2 week monitoring period, all electronic data would be processed and plotted for evaluation. The effects of domestic water usage on aquifer systems is routinely evaluated in this fashion to account for the peak water usage, which occurs in the mornings and evenings throughout the work week, and often increases on weekends. While a number of water level rounds have been collected at the site throughout the years, most if not all of the water level rounds have been collected during what would be considered off-peak times for domestic water usage (i.e., during the normal work day). Additionally, there have been no continuous water level data collected at the site to document the magnitude and/or the existence of groundwater fluctuations in the aquifer that would occur as a result of the residential well pumping that occurs at the W. Vermont site.

Key Equipment and Instrumentation:

1. 7 clean threaded 1" 10-ft PVC risers (includes 2 extra just in case)
2. 9 LevelTroll 700s (R72040 – 30-PSI) with seven 50-ft and two 100-ft vented rugged Tefzel cables
3. 1 Baro TROLL (R71870) with 6-ft rugged Tefzel Cable
4. RuggedReader (300 MHz) w/ Software (R59230)
5. 2 Rugged TROLL Com (RS232) cables
6. EverReady E2AA lithium batteries
7. Portable drill with 1/8" bit
8. Pipe wrench with rope to tie off
9. Duct tape
10. 10 S-hooks
11. Water level Indicator (WLI)
12. Laptop-synchronized to dataloggers
13. Plastic Sheeting
14. PPE-gloves
15. Tools
16. Tape measure

Step Testing

Following the conclusion of the 2 week, static monitoring program, a series of short term step tests is proposed for wells MW-WES-1c and MW-WES-2c. The purpose of step testing is to evaluate the degree of hydraulic communication that exists between the deep and shallow portions of the aquifer in this area of N. Holt Road. Each of the 2 deep wells will be pumped at a series of 2-3 flow rates which will be stepped up following a 1-hour duration at each of the selected flow rates. Based upon data collected during the sampling of these wells, the step tests flow rates are estimated to range from 2 to 6 gpm. The electronic pressure transducers will be maintained in place to monitor and record the changes in water levels in both intervals of each well, as well as in the nearby shallow observation wells (MW-WES-1b and MW-WES-2b). Manual water level measurements will also be collected from each of the wells to verify the accuracy of the dataloggers.

Key Equipment and Instrumentation:

1. QED Sample Pro 1.75" Bladder pump
2. QED Controller/Compressor
3. Plastic tubing total depth
4. WLI
5. Plastic sheeting, PPE and a tape measure